PASTORS AND PEOPLE REST.

NEW FACES TO BE SEEN IN CITY PULPITS.

ANY ONE WHO WISHES TO ATTEND CHURCH THROUGH JULY AND AUGUST WILL FIND MANY OPEN DOORS AWAITING HIM-WHERE THE PREACHERS WILL SPEND THEIR VACATIONS.

Whatever may have been the case a few years ago it is no longer true that the majority of the city churches are closed during the summer. It is a fact, however, that the larger churches are giv ing their pastors longer vacations than formerly; indeed, the larger the salary the more severe the intellectual pressure demanded by those who pay for his services, and the longer the time given for recuperation. In addition to the two or three summer months which the leading churches require their ministers to take as a vacation, they also furnish supplies for the pulpit during their absence.

of the leading pulpit orators of this country, and one or two from abroad, will be heard in this city within the next three months. One pas-tor, Dr. MacArthur, after a service of twenty-five years in the Calvary Baptist Church, is now on his way around the world; many of his brother minwill cross the ocean; Dr. Charles L. Thomp the head of a company of pilgrims already abroad, who will visit Ireland, England and Scotland, and cross to the Continent before their return. Dr. Parkhurst is, as usual, in Switzerland. Northfield, the Christian Endeavor Convention at Boston the numerous Chautauquas and other he visited by some of the clergymen, while still others will go to the mountains or the seaside or to rural districts, simply to "rest" and to get rid of "that tired feeling."

BAPTIST MINISTERS TO BE HEARD. R. S. MacArthur, for almost the first time his ministry, will be free from preaching on Sundays. For many years, during his vacation, he has preached two, three and even four times Sunday, and also lectured during the week. He dooes not believe in closing his church a single Sunday, and Dr. F. R. Morse, his assistant, will have charge of the pulpit during his absence. The pulpit will be supplied part of the time by exchange with ministers from Philadelphia and Brooklyn, as follows: June, the Rev. Archibald Cameron, Dr. Ellis, Dr. Humpstone and the Rev. George Flint Warren, of Brooklyn; July, Dr. Crandall, of Chicago, and Dr. C. J. Baldwin, of Granville, Ohio; August, Dr. D. B. Jutten, of Fall River, Mass; September, Dr. John Gordon and Dr. John Love, of Philadelphia; the Sundays in October and the first two weeks in November will also be supplied. Calvary Church and Sunday-school never closes. Calvary Branch, in Sixty-eighth-st, and the Boule vard, will also remain open. A new organ has been put into the chapel, new carpet will be put on parts of the chapel and electric lights may be inroduced during the summer.

Dr. W. H. P. Faunce, of the Fifth Avenue Church, has gone to Germany with his wife. He will spend a portion of the summer in study at the University of Jena, and, after a short time in Switzerland, he will return early in September. The church will be closed from July 1 to September 15. Dr. Thomas Armitage, former pastor of the church, will preach one or two Sundays in September. The Armitage House, a branch of the church, at No. 343 East Forty-seventh-st., will be open all summer, and will also keep up its day nursery and boys' and

Dr. Henry M. Sanders, of the Madison Avenue Church, will go to the White Mountains for July and August, and his church will be closed during

Dr. E. S. Holloway, of the West Thirty-third Street Church, will go to the home of his boyhood at Groton, Conn., for July and August, and the Rev. Dr. J. C. St. John will preach. One month is for vacation, and during the other the pastor will supply the pulpit.

Edward Judson, of the Memorial Church, Washington Square, will go to Hamilton, N. Y., and the Rev. James M. Bruce, his associate, will preach during his absence. This church is one that is open seven days in the week throughout the year, and is doing good all of the time.

METHODIST EPISCOPAL PULPITS FILLED. Dr. James M. King, of the Union Methodist piscopal Church, expects to take his vacation in August. The Union Church, at Forty-eighth-st., west of Broadway, is a new church organization comprised of the members of two churches, formerly wn as the St. John's and the Forty-third Street churches. The Rev. J. S. Tredinnick, assistant pastor, will have charge of the pulpit. The church is a free church, that is, no pews are sold, while at the same time everybody worshipping there, who is not dependent upon the charity of the church for heir support, will be expected to contribute to the church according to their ability. Families will be assigned to definite pews, so that the family circle shall not be broken in the House of God.

Dr. A. B. Kendig, of the Calvary Church, will

pend July in Massachusetts, and August at various points. His assistants, the Rev. Messrs. F. H. Carpenter and J. W. Selleck, will supply the pulpit. Although the church will not be closed, it will be cleaned, painted outside and retouched inside; the organ will also be reconstructed. Among the many attractions of this church are Bible classes for married men, young men, young women, young men and women, masters and misses, aside from the intermediate and primary classes, and an industrial bureau, a free dispensary, a day nursery

and a kindergarten.

The Rev. Sylvester F. Jones, of the Madison Avenue Church, will go to the mountains and to Cottage City, Mass., in August, when the church will

Dr. C. S. Harrower, of St. Luke's Church, will spend August in Manchester, Vt., but his church will remain open.

PROTESTANT EPISCOPAL CHURCHES OPEN. Dr. Morgan Dix, of Trinity Church, will go to his country home, at West Hampton Beach, Long Island, in July and August. Trinity Church is never closed, and the services are carried on under the direction of the vicar and curates.

Dr. R. Heber Newton, of All Souls' Church, expects to remain at least Hampton.

peets to remain at East Hampton, Long Island, until October, a longer time than usual in consequence of his special need of rest. The Rev. Alonzo Norton Henshaw, assistant minister, will occupy the pulpit. The church will be closed dur-

W. R. Huntington, of Grace Church, will spend July and August at North East Harbor, Me., his pulpit being supplied by the clergy of the parish in turn. The church will remain open all summer. Dr. David H. Greer, of St. Bartholemew's Church, will spend his vacation, as usual, at New-Canaan, Conn. The church will be kept open, and the parish

clergy will conduct the services.
Dr. E. Walpole Warren, of the Church of the Holy Trinity, sailed for England with his bride on the Germanic on June 26, where they will spend their vacation traveiling until the end of September The assistant ministers will be in charge of the church during the summer months. The property of the church is advertised for sale, and probably before the fall arrangements will be made else-

where for continuing and enlarging the work of the part of his vacation in the Blue Ridge Mountains. The Rev. W. Stanley Emery, vicar of the parish,

will occupy the pulpit during the summer. Some changes may be made in the chancel decoration before Dr. Satterice's return.

before Dr. Satterice's return.

Dr. J. W. Brown, of St. Thomas's Church, will
be on the coast of Maine from July 1 to September
16. The church will not be closed, the Rev. John
Huske being in charge of the pulpit.

Dr. W. S. Raineford, of St. George's Church,
will spend his holiday as usual fishing in Canada.

The assistant decay will occur. The pulpit.

The assistant clergy will occupy the pulpit. This church, which is doing much to solve the down-town problem, is never closed.

Dr. D. Parker Morgan, of the Church of the Research

Heavenly Rest, will spend July and August in Columbia County, near the summer home of the parish. The Rev John Mitchell Page, senior assistant pastor, will occupy the pulpit, and the Church will remain open all summer. It is expected that a perfect system of ventilation will be introduced during the summer. The two homes introduced during the summer. The two homes given by Dr. F. Humphreys and Mrs. W. J. Cassard will be kept filled with children and their mother.

vacation began the middle of June, and will last three months. The Rev. T. F. Cashey will preach the first two Sundays in July, and the Rev. New-ton Perkins the last two. The Rev. Dr. Hartley Carmichael will preach in August and September. Dr. J. H. Rylance, who recently married Miss Coa. goes abroad, spending part of his vacation

in the English lake district and in Scotland. The Rev. Richard Cobden, the assistant minister, will, as usual, take the services in Dr. Rylance's ab-

VISITORS IN PRESENTERIAN PULPITS.

Dr. John Hall, of the Fifth Avenue Church, will spend July, August and part of September in England and Ireland. Dr. Pentecost, of London, will supply the pulpit for the month of August, and Dr. MacIntosh, of Philadelphia, a part of September. The church will be closed in July for renovation. Dr. George Alexander, of the University Place Church, will have a vacation of five or six weeks. From \$15,000 to \$20,000 will be expended in enlarging the Sunday-school accommodations and in otherwise improving the church. This work will probably begin about the middle of August, and the church will be open until the work is started, the services being conducted by the assistant minister.

church will be open until the work is started, the services being conducted by the assistant minister. Dr. C. H. Parkhurst, of the Madison Square Church, has gone to Switzerland, where he will spend most of his vacation, returning to New-York at the end of September. The Rev. John Hopkins Denison, the new assistant, will occupy the pulpit in his absence. The church will be closed for cleaning during the month of August.

The Fourth Avenue Church will have for its preacher during August and September, the Rev. Dr. Arthur T. Pierson, who is frequently heard in this city, and who is always sure of a hearty welcome from a New-York audience. Dr. John R. Davies, pastor of this church, will spend the summer in the Adirondacks. The church will remain open all summer, different preachers occupying the pulpit this month.

Dr. Wilton Merle Smith, of the Central Church, has also gone abroad, and will spend the greater part of his vacation in Switzerland. The pulpit has been supplied during June by the Rev. Dr. George T. Purves, of Princeton. To-day, and also on September 15, President M. W. Stryker, of Hamilton College, will preach; July 14, 21 and 28 President Francis L. Patton, of Princeton, and on September 8, the Rev. Dr. John Gillespie. The church will be closed through August. New sidewalks and improvements in the facade of the church will be made, costing about \$5,000. There are only three Presbyterlan churches in the city which have given greater amounts of money during the year than the Central. The report of last year shows that it has been the best, financially, in the history of the church, having collected for church expenses \$16.245; for foreign mission, \$6,221 for home mission objects, \$8.80; for city missions, including its two missions, \$20,218. There is no debt of any kind upon the church, and it is in a happy, prosperous and perfectly harmonious condition.

Dr. H. T. McEwen, of the Fourteenth Street Church, will so the Christian Endeavor Convention in Boston this week, and then begin his vacation of six

mission, under the care of the Rev. E. L. chester. At the chapel there is a German prayermeeting, and also classes in dressmaking, cooking, singing, etc.

Dr. Henry Van Dyke, of the Brick Church, will spend a part of his vacation at West Hampton Heach—going to his camp in Canada to fish sometime in August. Among those who will preach during his absence are President Stryker, of Hamilton College; Dr. Taylor, of the Brick Church, of Rochester, and Dr. Hamlin, of the Church of the Covenant, of Washington.

Dr. Howard Duffield, of the First Church will spend two months and a half in the Catskill Mountains. Dr. John S. MacIntosh, recently of the Second Church, of Philadelphia, will occupy the pulpit during July, and in August the Rev. Thornton B. Penfield, secretary of the Young People's Department of the Presbyterian Board of Home Missions, will preach. The church will remain open the year through. The Sunday-school at 9:30 a. m., and the social prayer-meeting on Wednesday evening will also be carried on as usual.

The Rev. John C. Palmer, who has succeeded the Rev. D. H. Overton at Emanuel Chapel, of the University Jlace Church, will have two months' vacation.

REFORMED AND DISCIPLES' PULPITS.

Dr. D. J. Burrell, of the Marble Collegiate Church, will be in Europe for three months. The assistant pastors will supply the pulpit. The Sunday services and the midweek prayer-meeting Wednesday evening will be continued throughout the summer. The Rev. John L. Clark will preach during July, the Rev. Dr. James McLeod the first two Sundays of August and the Rev. Alfred E. Myers from August 15 until the return of Dr. Burrell, in October. Since October, 1894, 149 persons have been received into full membershipsixty-five on confession of faith and eighty-four

Dr. Edward B. Coe. of the Fifth Avenue Collegiate Church, will spend his vacation at Wainscott, Long

Church, will spend his vacation at Wainscott, Long Island. The church will be closed during July for cleaning and important repairs to the organ. The assistant minister, the Rev. Waiter Laidiaw, will preach on August 4 and 11, the Rev. Dr. Paul F. Sutphen on August 18 and 25 and Dr. Teunis S. Hamlin on September 1, 8 and 15.

Dr. Madison C. Peters, of the Bioomingdale Church, will spend his vacation 'ecturing to Chautauqua assemblies in Kentucky and Tennessee and in other parts of the country. The church will be closed about the middle of July for necessary cleaning. Dr. Peters will also spend some time at Asbury Park, and his services for pastoral duties will be at the command of any and all who may need him there or elsewhere.

Dr. William Justin Harsha, of the Second Collegiate Church of Harlem, will go to Belmar, N. J.

The COST OF STEAM POWER.

SOME ITEMS OFTEN OVERLOOKED—RECENT RESEARCHES IN BUFFALO.

So many other questions connected with manufacturing seem to be more important that the actual cost of the power consumed in running lathes, looms, elevators and such machinery, that this phase of the industry and the possible econ-

need him there or eisewhere.

Dr. William Justin Harsha, of the Second Collegiate Church, of Harlem, will go to Belmar, N. J., but will supply for one Sunday in Dr. Gregg's shurch, in Brooklyn, and at the Long Beach Chautauqua. The Rev. J. T. Wallace, of Tampa, will supply the pulpit, and the church will remain open all summer.

Dr. Benjamin B. Tyler, of the Church of the Disciples, will go West, his headquarters being at Grand Rapids, Mich. He will visit the Disciples, encampment at Bethany Park, near Indianapolis, and give six lectures on the Christian Endeavor Pledge, preach a discourse and deliver an address on some of the great preachers of the metropolis. Dr. Tyler has also an engagement with the Christian Endeavor Convention in Des Moines, Iowa, in August. On July 14 Dr. Tyler will preach in the Auditorium in Asbury Park, and he will also attend the Christian Endeavor Convention at Boston. His church will be open all summer, but in July and August there will be no evening services.

Dr. Jy M. Philputt, of the Lenox Avenue Union Church, will have charge of the Summer Parliament at Long Reach during his vacation, which begins July 1, and lasts till September 1. He will come to the city and preach for his people during July, and the church will be closed through August.

VIGOROUS SUMMER WORK PLANNED. Dr. S. S. Seward, of the New Jerusalem Church, will visit Monument Beach, on Cape Cod, in July will be held every Sunday morning at the Chapel of Divine Providence, a mission centre carried on by the church, conducted by lay members of the congregation. It is expected to enlarge the chapel

quarters.
The Rev. D. Asa Blackburn, who succe Charles F. Deems, founder, and for so many years the pastor of the Church of the Strangers, will the pastor of the Church of the Strangers, will take only a short vacation, as he recently came upon the field. The church has never been closed a Sunday since 1876, and will not be closed this summer. In the few months that Mr. Blackburn has preached as pastor of the Church of the Strangers, more than thirty persons have joined it. The members are awake to the responsibility resting upon them in lower New-York, and they expect great work in their church in the future. The Rev. T. C. Williams, of All Souis' Church (Unitarian) will spend the greater part of his two months riding a bleyele. The church will be closed from the middle of July until the middle of September. The Friendly Ald House, in Thirty-fourth-st., will be thoroughly built over, with gymnasium, baths, large hall, etc.

Dr. George U. Wenner, of the Christ Evangelical Church, will go to Ray Brook, N. Y., during August, his assistant preaching during his absence.

Dr. J. B. Remensnyder, of St. James's Lutheran Church, will divide his vacation between the Berkshire Hills, Barre, Mass., and Asbury Park. The church will be closed, as it has been shown in previous years that scarcely any one would attend the church services and Sunday-school as the people in the neighborhood all, practically, are out of town during the summer.

The Rev. G. F. Krotel, of the Holy Trinity (English) Lutheran Church, will be absent during July and August. The church will be closed until his return.

e Rev. Dr. Robert Collyer, of the Church of the dah (Unitarian), will have three months' vaca-and his church will be closed while he is

absent.

Dr. Samuel H. Virgin, of the Pilgrim (Congregational) Church, goes to his farm at West Chelmsford, Mass, for two menths. Dr. F. H. Marling and the Rev. C. H. Small will fill the pulpit until his return. Dr. Virgin has begun his twenty-fifth year with his united, happy, prosperous people. The last year has been full of vigorous church work.

MAN AND WOMAN MISSING

DID PETERSON AND MRS. MORN GO AWAY TOGETHERT

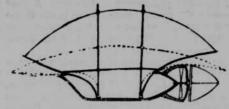
Adolph Peterson, a teacher of music and German in Bt. John's College, Fordham, is missing, as is Mrs. Dolores Morn, wife of a well-to-do carriage-maker, of this city, and it is thought that the couple have gone away together. Peterson had been connected with Bt. John's College for Affred years, and also acted as organist of the Roman Catholic Church of Our Lady of Mercy. He was a graduate of Heidelberg University. He was married, and his wife is now at No. 33 Columbine ave. ried, and his wife is now at No. 888 Columbine ave. Peterson was divorced from his first wife, by whom he has a daughter twenty-one years, old. The Morns lived at No. 2,568 Marion-ave., and Peterson was engaged to teach music to Mr. Morn's four children. It was noticed that Mrs. Morn and Peterson appeared to be interested in each other, and he was discharged. The Morns then moved to One-hundred-and-sixty-fourth-st. and Trinity-ave. On Wednesday Mrs. Morn had a quarre: with her husband, and taking her money and jeweiry left the house. It is thought that she then met Peterson and they went away together, going to Europe, it is believed. Peterson is not thought to have had much money. Mr. Morn has moved to Brooklyn with his four children.

SCIENCE AND MECHANICS.

KUPPRECHT'S FLYING MACHINE

USING GAS AND FANS TO ASCEND AND SCREWS TO GO AHEAD-SOME ORIGINAL FEATURES.

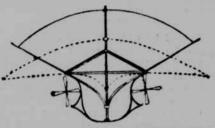
The time has gone by when a man was pro-counced a "crank" merely because he had invented a flying machine. Scores of people who undertake such schemes are ignorant of the experiments made by others, are unfamiliar with the strength of materials and the exact load which a given quantity of gas or an aeroplane of a given area will sustain and overlook some of the fundamental principles of physics. But when experts in mechanical and steam engineering like Hiram S. Maxim and scientific investigators who have won world-wide fame by their original researches, such as Langley, wrestle with the problems it volved in serial navigation, and especially when these latter inventor



to have done, sneers are out of place, and reveal how unobservant are those who still maintain a scornful attitude on his subject. Among those who have been working in this field is George J. Kupprecht, of No 4.827 Haverford-ave., Philadelphia. He has not been able to command the pecuniary means and some other advantages enjoyed by more distinguished experimenters; but he is a man of ideas, and his project, herewith briefly described, has its good points. It is worth examination. Mr. Kupprecht is looking for capital to assist him in ouilding a ship after these designs, and is very confident that they are practicable.

Above the hull of his airship the Philadelphia in

ventor stretches a balloon-like, flexible covering, which may be inflated temporarily to assist him in ascending. He then proposes to discharge (or com-press in storage cylinders) a large part of the gas, and lower his cover to a curve corresponding to which would be offered to a horizontal movement through the air. This flattening is effected by



screw-threads on vertical rods. Rotation of the latter not only partially collapses the balloon, but it also shifts to an almost horizontal position several metallic ribs, projecting forward, aft and sideways, which stretch and support an aeroplane, the wings that sustain his craft after it is once up and in motion. To assist the balloon in lifting the ship quickly some fans are mounted on horizontal shafts, one on each side of the hull, and working in semi-circular depressions so that the downward thrust of the fans is exerted on the free air, and the upward movement occurs under cover. As soon as proper elevation is secured these fans are set so as to act on the air after the fashion of screws, and co-operate with the propeller astern in driving the vessel forward. There is a rudder adapted to controlling motions in both a horizontal and a vertical plane, combining the steering functions of a bird's tail with those of a fish's. A properly braced sheet of aluminum constitutes the roof of the craft. The gasbag is brought down snugly on top of this, when the collapsing stage is reached. This metallic shell keeps the bag from being driven inward in front by motion through the air. But for this precaution the gas might accumulate aft and seriously disturb the equilibrium of the vessel longitudinally. The hull, containing machinery and passengers, brings the centre of gravity well below the level of the aeropiane, and thus automatically prevents any lateral tilling.

Thus far Mr. Kupprecht has confined his study mainly to those features of his ship here described, and has not given special attention to motive power. It is his intention, however, to select such a motor as seems to be most available for his purposes when he comes to build. as to act on the air after the fashion of

this phase of the industry and the possible economies resulting from a substitution of electricity omies resulting from a substitution of electricity for steam are apt to be ignored. There are curious differences of opinion on this subject by persons not well informed; hence a recent contribution to the discussion, made by Horatio A. Foster in the pages of "The Electrical Engineer," pos-

facts, this gentleman refers to two or three factors in the cost of steam power which are often overlooked. In the great majority of cases, he says, a power-plant is run at about three-fourths its rated capacity. Hence the fixed charge and the coal consumption for each horse-power actually applied to work exceed the estimate. Again, it is customary to consider the price of fuel mainly in computing the cost of steam-power, whereas the sion to two firemen employed in the same estab-lishment, one at night and the other by day. One

Mr. Foster has been making investigations in a number of typical establishments, all in Buffalo, of late. These include newspaper offices, bakeries, flour mills, a department store, an electric-light plant and three waterworks plants. Most of them were in operation twenty-four hours daily, but some of them only nine, eleven, or fifteen hours. The average power used varied from 19 to 4,009 horse-power. Mr. Foster thus secured a great variety of conditions. The resulting figures show that each shop and factory differs so much from every other that no general law can be laid down beyond the well-established rule that plants consuming large quantities are usually more economical than those using much less. In one establishment, using from 1,309 to 1,409 horse-power, but running only eleven hours a day, the annual cost per horse-power was \$32 12; two others, whose consumption was from 200 to 300, but which were in operation twenty-four hours daily, expended 48 19 and \$53 37; while still another, having the same hours, but using from 3,000 to 4,000 horse-power, could not produce it for less than \$72 M. Seven other plents, averaging from ten to sixty horse-power, showed an outlay ranging between \$76 45 and \$233 55 annually for horse-power!

PHOTOGRAPHY IN COLORS. PROFESSOR JOLY GIVES A PUBLIC EXHIBITION

OF "ONE-SCREEN" WORK.

Several times within the last two years The Tribune has mentioned a system of photographing
through glass screens, ruled with colored lines, 200
or 200 to the inch. A transparent positive thus obtained, covered with a similar screen and held up
to the light, reproduces the hues of the original
with more or less faithfulness. Dr. Joly, of Dublin,
who has been conspicuous in this work on the other
side of the Atlantic, recently displayed, at a solree
of the Royal Society in Löndon, pictures of this side of the Atlantic, recently displayed, at a solree of the Royal Society in London, pictures of this sort, representing men and women in striking costumes, pansies, scenery, buildings, china and other subjects. The degree of accuracy obtained is said to have been surprising.

Among the advantages of this system are the possibility of multiplying the picture endlessly from the possible of the system in a mark lender, and the

one negative, exhibition in a magic lantern and the restoration of the colors, if the latter fade with time, by substituting a newly made screen for the old cover. The colored lines, says "The London

obl cover. The colored lines, says "The London Times," are ruled with inks mixed with gum and gelatins upon a gelatine-coated plate. While these screens are not yet being produced on a commercial scale, the same journal declares that their menufacture is not likely to be attended with difficulties necessitating a high price.

James W. McDonouigh, of chicago, it will be remembered, not only claims to have originated this idea of getting all three colors upon one screen for photography on this plan, but also to have developed it further than Dr. Johy. Our fellow-countryman believes that he is sale to make his photographic positive a printing-block, to rule his colored lines on white paper, and then, by a carefully "registered" impression in a slow press, to illustrate a magazine or book in colors corresponding to those of the objects represented.

ELECTRIC LIGHTING FOR CARRIAGES. Although it is claimed that the first private carriage having outside and inside electric lamps was that of the Lord Mayor of London twelve years

ago it is only within a year or two that the prece-

other foreign dignitaries have carriages thus light-ed; and their example, as well as the exhibition of such vehicles at the Antwerp World's Fair last year, has gone far toward establishing the fashion abroad. As yet very few coaches in this coun-

try are electrically lighted.

It is a simple matter to provide a storage battery under the coachman's seat which will supply the current. It is necessary, however, to mount the lamps on elastic supports of rubber or steel to prevent the jolting of the vehicle from breaking the lamps. Incandescent burners of less size than those ordinarily employed in houses and offices are selected for this service. An eight-cell batare selected for this service. An eight-cell bat-tery, 8 inches long, 7 deep and 4 wide is said to be sufficient to maintain the light for eighteen hours without recharging. The inside lamp is placed in the center of the roof, and has two filaments. A reflector and a flat glass plate cover are other features of such lights. Additional lamps of various colors are sometimes attached to the harness at different points, producing a highly decorative ef-fect.

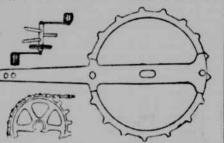
SELF-INDUCTION IN AN ELECTRIC WIRE THE ANNOYANCE IT CAUSES, AND HOW IT MAY BE OVERCOME.

electrician in many ways, but especially in telegraphy and telephony, is called self-induction. Each time the flow of a current is stopped or started, a certain lag is produced as if by inertia. This is ex-ceedingly short in point of time; and its extent depends somewhat on the size and length of the conductor and some other circumstances. So long as the current continues to flow in one direction, there is no difficulty of this kind; but it is as if a certain momentum had to be acquired or overcome each time the circuit is closed and opened. Hence, in sending messages over an ocean cable, the speed with which the letters are formed by interrup and restoring the current, no matter by what code of signals, is limited by this tendency to blur, in conse quence of self-induction. The same trouble is enabsolute barrier to this form of communication under the Atlantic Ocean. Now that alternating currents for light and power are coming into such extensive use, the phenomenon manifests itself in another way. A certain amount of voltage is wasted in overcoming the induction of the line. In the first two uses of electricity here mentioned the effect which is chiefly lamented is impairment of ciency; in the latter two it is the economical phase of the subject which attracts the most attention. Both considerations have incited efforts to obviate, or at least to lessen, this evil. Self-induction itself seems to result from the re-

sistance offered, by the dry air or insulating coat surrounding a wire, to the progress of the invisible rings of force which encircle a conductor and move forward when an electric current flows. That resistance once overcome, all goes well until the current ceases, when a corresponding change oc curs in the surrounding non-conductor or "dialec tric." Now if a frequently interrupted and restored current be led back through a second wire parallel with the first, but insulated therefrom, a fresh set of effects, occurring simultaneously and showing about the same intensity, but always in the reverse direction from those produced by the other wire, will be developed in the dialectric; and if the wire, will be developed in the dialectric; and if the two conductors are placed pretty close together, the one set of impulses will be partially offset by the other. Experience having shown that self-induction could be lessened in this manner, some one conceived the idea of making the supply and return wires concentric; that is, one formed as shell outside the other, but separated from it by a layer of insulating material. This is a more costly arrangement than laying two wires parallel to one another, no doubt, but it is expected to prove more efficient. Tests recently made by Professor Guye, with the concentric conductors employed in connection with an electric lighting plant in Geneva, Switzerland, tend to confirm this belief. Using the core for a "lead" and the shell for a return, he found that the voitage of a high-tension alternating current would not show any greater drop in a given distance than a continuous current would.

A NEW SPROCKET WHEEL HOW A PACIFIC COAST INVENTOR WOULD MODIFY THE OLD ONE.

In a bicycle the propelling power developed by the alternate thrusts of the rider's legs is communicated from the pedais to the hub of the driving wheel in the rear by means of what is called a usually has six spokes, and has a small hub. Roy Ebey, of New-Whatcom, Wash., proposes to dis-



pense with these, and to attach the crank of the right pedal to the sprocket in the manner shown in the larger diagram herewith. He believes that he would thus lighten the machine a little, and also bring the two pedals closer together by at least half an inch. If he actually does lessen the weight with-out impairing the strength of the vehicle, of course for makers are constantly studying how to effect for makers are constantly studying now to enect that very result. And most riders, probably, would like to shorten the lateral distance between their feet, if thereby they were able to push more di-rectly downward than now. Mr. Ebey claims that they would, as a result of this change, and that it would be easier to remove a sprocket-wheel of his design than one of the old kind.

THE NANTASKET BEACH ELECTRIC ROAD. THE FIRST LINE ON WHICH ELECTRICITY HAS DISPLACED STEAM.

Since the New-York, New-Haven and Hartford Railroad Company began to operate its Nantasket few days ago, the original announcement has been supplemented with interesting details by the technical journals. Nantasket Beach is on the east side of a great sand bar that juts out from the south shore of Massachusetts Bay, and is a popular summer resort for Boston. The Old Colony company, whose extensive network of lines has re-cently come into the control of the New-Haven people, have for years had a branch, on which House station. What the new managers of the road have done is to substitute electricity for steam on this seven-mile line. The enterprise de-serves the more attention because it is said to be the first instance of the kind in this country. It electric traction.

The road is double-tracked, stone-ballasted and very level, but has a number of curves. The rails weigh seventy pounds to the yard, and they are "bonded," or connected with stout copper con-ductors, to provide for the return current. The electric supply is derived through an overhead wire, and the familiar trolley wheel and pole. The power-house is situated two miles from Old Colony House nus at Pemberton, on the tip of the cape. The trolley wire has a pear-shaped cross-section, and is almost flat on its lower surface, in order to facili-tate stronger suspension from the hangers, and to lessen the liability of the trolley wheel to jump

three trailers. The motor-cars are of two types Four of them are ordinary baggage-cars, equipped Four of them are ordinary baggage-cars, equipped with troiley, motor, controller, gong and whistle, the last-mentioned piece of mechanism being operated with compressed air. Six open cars, each having sixteen reversible benches and three continuous seats or sideboards, are also being fitted up in the same manner. Some of the motor-cars have only two motors tone on each trucko and some have four. These cars weigh about thirty tons. There will be two kinds of service rendered, local and express. At present there are only ten stations, including the termini, but it is proposed to build others at intervals of a quarter of a mile. Experimentally a speed of eighty miles an hour has been made on this line, and doubtless this could be exceeded with the present motors. But it is not likely that anything like this will be attempted at present with passengers, especially in open cars. One of the new motor-cars, however, has hauled thirty gravel cars in a train at a forty-mile rate.

APPLICATIONA OF ELECTRICITY. Two or three projects for converting water power

Two or three projects for converting water power into electricity and transmitting the latter to Atlanta over a line seven and a half miles long are now under consideration in that city. One of them would develop 14,000 horsepower, another 20,000, and a third 36,000. These are all modifications of the same general pian.

Electric motors of suitable design are now attached to the driving shaft of a printing-press in place of one of the pulleys. The machine can then be run at any one of five different speeds, or backed up at a slow rate, simply by moving a lever. Such a press runs more steadily than one with belts, and the frictional electricity developed by belting is entirely done away with.

Three electric hoists, each having a capacity of 2,000 pounds and a rope speed of 800 feet a minute, constitute part of the outfit of an extensive plant for unleading and loading coal in San Francisco.

Coal is thus transferred to bunkers either on the wharf or in the yard, for further distribution. Two small motor are haul the coalcars to and fro, and easily handle a load of twenty tons, including the weight of the cars themselves.

In order to persuade a trolley current to effect its return along the rails, it is usual to connect the latter with copper wires, called bonds. Great diffi-culty has been experienced in attaching a bond so that its contact will not be impaired by contrac-tion and expansion, the jar of travel or rust and dirt. In what is called the "plastic bond," a new thing, a soft, pastelike compound is used to conthing, a soft, pastelike compound is used to conduct the current from each rail to a flat iron bar or fishplate, which is bolted to both rails as on steam railways. The surfaces of rail and bar are cleared by a scraper or emery wheel, and then rubbed with an anti-rust amalgam or alloy. A flat ring of cork, 5-8 inch thick and having an inside diameter of 1½ inches, is then attached to the steel by means of an insulating cement. The core is filled with the plastic conducting material inclosed in a steel spring, which squeezes it out sideways, and then the splicebar is bolted down over the cork and composition so as to make a perfect contact. It is claimed that bonds of this sort have been in use four years without showing deterioration. The plastic material always remains soft.

Projects are under consideration in Italy for de-

Projects are under consideration in Italy for de veloping electricity by hydraulic power, and trans weloping electricity by narrana power, and train-mitting the same to Milan and other industrial towns in Lombardy, to Turin, and through the Province of Biella. The aggregate horse-power to be dealt with by these three schemes amounts to 30,000 or more.

In English dynamos, according to "Engineering,"

it is usual to wind the coils outside of the soft iron core; but in America, the practice of inserting the copper in slots in the core is preferred. The latter method has the advantage of allowing the core to method has the advantage of allowing the core to run almost in contact with the field magnets. The consequent reduction of the "air space" allows the maker to use smaller magnets. A machine of a given power, therefore, can be built by this method more quickly and more cheaply, and it is stronger, than one of the other kind. But English electricians say that the slotted armature dynamos show a ten-dency to spark at the commutators.

FOREIGN INVENTION AND RESEARCH. A French photographer has arranged an alcohol lamp so that while it is immersed he can throw powdered magnesium into the flame and this se-cure a very brilliant light under water. In this manner he has been able to obtain some clear and beautiful photographs of the bed of the Mediter-ranean. Oxygen is carried down in the apparatus

In Great Britain weather forecasts are ex tensively telegraphed throughout the agricultural districts during the hay and harvest season.

In connection with the International Fair in the City of Mexico this year it is proposed to erect a number of buildings for purposes of residence and exhibition that can be utilized afterward. This is expected to become a highly attractive as well as permanent feature of the city.

That wonderful British locomotive, the James Toleman, which was brought over to the Chicago Chicago, Milwaukee and St. Paul Road to test her capacity. She developed so many faults, however, that after several modifications in design she was sidetracked in Milwaukee, and is now for sale cheap. A safe, composed largely of cement, having wire

netting imbedded in it, was tested recently in Ger many, in order to ascertain whether it is feasible to build safety vaults of such material. The safe was placed on blazing logs, which had been soaked a temperature of 1,800 degrees Fahrenhelt. When the safe was opened the contents were entirely uninjured, and a maximum thermometer was found to have made a record of only 85 degrees inside the receptacle. The intensity of starlight can now be measured so accurately with electrical devices that this sys tem is fairly comparable with the other methods. Indeed, with stars of the first and second magni-

indeed, with stars of the first and second magni-tudes, it is not necessary to use even a telescope. The apparatus employed consists of a clean bit of aluminum, coated with selenium, and dipped into oenanthol. A gaivanic cell is thus created, and the fluctuation in the current produced, or, rather, the square of the potential developed, is proportional to the light. The custom of placing wedges or blocks of The custom of placing wedges or blocks of cork under the heel and instep inside the shoe, in order to give the wearer an additional inch or two of height, has been in vogue in England and France for several years, and is being introduced in the United States. It is raid that at least two hundred sets of these "elevators" are in use in New-York City, chiefly among actors, actresses and singers, who are inartistically short in stature.

SUNDAY OBSERVED AT MT. GRETNA.

THE GATES CLOSED TO ALL EXCEPT COTTAGERS-THE DAY'S EXERCISES.

Mount Gretna, Penn., July 7 (Special).-The pi prieties of Sunday were rigidly adhered to at the Pennsylvania Chautauqua Assembly to-day. The day was the first warm one since the opening of the session in this mountain retreat a week ago. The cottagers passed the day in worship and rest, and but for the melody of song birds and the music of the choir, which filled the woods, there would not have been a sound to break the quiet peace that prevalled. Sunday trains ran to the grove, but persons who came to Mount Gretna with the intention of mingling with the Chautauquans were disappointed.

To-day's programme was devoted entirely to re-ligious exercises. The inhabitants of the Chautau-quen village turned out in force at the various serquen village turned out in force at the various ser-vices. The auditorium was well filled in the morn-ing. Dr. M. H. Richards, of Muhlenberg College, conducted the exercises and delivered an able ser-mon from the text, "What shall we say then? Shall

mon from the text, "What shall we say then? Shall we continue in sin that grace may abound?" In the afternoon a Sunday-school was organized, and the Rev. J. L. Selbole, of Philadelphia, was chosen for superintendent. At the evening service in the auditorium there was a large attendance. Chancellor Theodore Schwank preached a sermon on the glories of nature and art, in which he made particular reference to the Chautauqua as a school of arts and sciences environed by scenes of natural beauty and litted to lead the soul from nature to nature's God.

The number of cottagers is increasing daily. The population of the Chautauquan settlement is now between 700 and 900 souls, while several hundred people from neighboring towns and cities are present every day as visitors. Seventy-five honorary vice-presidents have been selected to preside at the various sessions, three different persons being expected to preside daily. Some of the most prominent men in the State have been selected. The Rev. M. H. Valentine, of Philadelphia; the Rev. A. R. Bartholomew, of Pittsburg, and George S. Duncan, of Harrisburg, will preside to morrow.

NEW TORPEDO BOATS FOR THE NAVY.

Baltimore, July 7 (Special).-Work will be begur pedo-boats for the United States Navy at the Co-lumbian Iron Works and shippards this city. All shops of the works, and is an exact lac-simile in shape of the three boats, all of which will be allke in lines and dimensions. The model is carefully excluded from the public gaze, and the officials of the work will give no detailed description of it for the reason, they state, that the Government is de-sirous of having as little publicity as possible at-tendant upon the construction of these war vessels.

tower, and the other boat, also to be built at Plans for the submarine boat, also to be built at the Columbian Iron Works, are nearing completion, and work has been begun upon the working model. This boat will be 80 feet long. It feet beam and I draught.

tin was before the Police Commissioners about two weeks ago for alleged intextention. On the morning of June 27 he fired two shots at his wife, at their home, No. 3,631 Third-ave. He was arraigned before Police Justice Martin in Morrisants Court, and held in 12,000 ball for the General Sessions, on a charge of assault. Next day the Commissioners dismissed him.

About 4 o'clock yesterday morning Policeman Hand, of the Morrisania station, found Martin lying, half leaning, against a large stone window near One-hundred and-thirty-ninth-st, and Locust near One-hundred and-thirty-ninth-st, and Locust-ave. Martin was acting strangely, and was ap-parently ill. Policeman Hand arrested him for in-toxication. In Morrisania Court yesterday morning Policeman Hand said that Martin acted more as if insane than intoxicated. Martin's wife also told Magistrate Cornell that she believed her husband was insane. The Magistrate committed Martin to the care of the Department of Charities and Cor-rection for examination as to his sanity.

POOR CONDITION OF THE BUILDING OF PRIMARY NO. 36.

THE PUPILS COME FROM THE POOREST CLASS OF HEBREWS-LITTLE PROVISION FOR LIGHT

Not the least valuable of the services performed masses as to the necessity of sanitary construction in their homes, and as to the desirability of regarding the laws of health. Probably one-fourt! of the pupils entering the public schools of New-York come from families where cleanliness is not considered next- to godliness and where the comsuch families attend the public schools and they first see what a sanitary building is (as even the poorest New-York public schoolhouses are, as o pared with the tenement-houses these pupils ar coustomed to), and then they learn the first ples of maintaining health in a great city. This less



PRIMARY SCHOOL NO. 36. son is especially valuable in the lower wards on the

East Side, where more families are packed together to the acre than in most parts of the globe. Primary School No. 36, in Monroe-st., near Market, is situated in one of the worst spots of New-York City so far as the sanitary condition of the sur-rounding houses is concerned. The school building itself is far from being an ideal schoolhouse, but as compared with the apartments adjoining it is fairly good building. This part of the city is the centre of a dense Hebrew population of the poores class. They, as a rule, are too poor to protest ef the houses they live in, and they are too ignorant to insist on having the law as to light and air in tenement-houses respected.

To these people Primary School No. 36 seems like a model of cleanliness and sanitary construction. In reality the building is a disgrace to the system. It has the fatal objection of being built in the centre of a block without having a vacant lot on each side building occupies a site on the east side of Monroe st. The site consists of two city lots, with a front-age of 150 feet in Monroe-st., but having the unusual depth of 142 feet. The lots were purchased for \$20, 000. The building is the ordinary three-story school building of the period, 1890-1870, having the first story of brownstone front and the upper stories with pressed brick and brownstone trimmings. The main building is 36 feet wide by 122 feet deep, wings, two in the front and two in the rear, cover the entire width of the lots. Until a year ago there was a factory adjoining this school on the north but it collapsed and caused the death of a number of workmen. The lot has remained vacant ever

since, no effort apparently being made by the school trustees to secure it for much needed light and ventilation on that side. The sign, "For Sale on Easy Terms," is displayed on the lot. Since the collapse of the building the light on that side of the school has been good. The school building was erected in 1863 at a cost of \$45,000. It is now attended by some 1,100 pupils, about all of whom are Hebrews.

The principal of the school is Miss Sarah E. Raywood, and the assistants are Miss Ella F. Graham, Miss Margaret A. Blaney, Miss Catharine L. Manning, Miss Jennie L. Poole, Miss Mary A. Ducey, Miss Kate A. Byrne, Miss Florence N. Tyler, Miss Kate A. Byrne, Miss Florence N. Tyler, Miss Kate A. Byrne, Miss Mary M. Solan, Miss Alec Conrad, Miss Matlida Mayer, Miss Jennie F. Huggard, Miss Clara A. Ryan, Miss Agnes Cronin, Miss Jemima A. Ford, Miss Margaret A. Somers and Miss Anna V. McCarthy.

BISHOP CLARK AND PRESIDENT LOW THE MEM BERS ENROLLED.

Many responses to the circular lately sent out by the League of Catholic Unity, composed of twenty-one clergymen of the seven leading religious de-nominations, have been received from both clergy and laity, and they include many strong and in-fluential names. The first clergyman to ask for expenses, in the League was the vectorable Rishop enrolment in the League was the venerable Bishop Thomas March Clark, of Rhode Island, and the first

layman was Fresident Seth Low, of Columbia Col-lege, just before his recent departure for Europe.

The work of the League for the immediate future in carrying out its scheme for the reuniting of Christendom will be the organization of local cir-cles, wherever there shall be a number of the mem-bers in one place. For the organization of such local circles a constitution has been prepared for adoption, the same which has been adopted by the parent bedy. This constitution is preceded by a preamble, setting forth the four articles of the Lambeth Conference as a basis of Church unity.

THE CATHOLIC SUMMER SCHOOL OPENED

nual session of the Catholic Summer School of America was opened to-day with pontifical high mass, celebrated by Archbishop Satolli, Apostolic Delegate, at St. John's Church. Twenty priests tacle. The building was filled to the doors long before the time for the opening, and many were turned away unable to gain admittance. Arch-bishop Corrigan, of New-York, preached the serof the throng by his eloquent and sincere dis-course. Few of the assembled throng had ever wirnessed divine services celebrated by either of the distinguished prelates, or listened to a sermon preached by Archbishop Corrigan, and it was an occasion to be remembered by those who were

On Monday the regular work of the school wil begin, lectures being held in Weed Opera House, and will continue until August 19, when the ses sion closes. The Administration Building on the new grounds will be open to the school, and lectures held therein from time to time. Dr. Thomas J. Conaty, of New-York, the popu-

Mosher, secretary, of Youngstown, Ohio, is making every effort to insure the success of the present

session. Large crowds are arriving on the incoming trains and boats, and pleasant quarters are guaranteed to all, as the local committee have completed all arrangements to facilitate the agreeable entertainment of all visitors.

Among the priests in attendance and who assisted are the Rev. James N. Connelly, and the Right Rev. John M. Farley, New-York, the Rev. P. D. O'Nell, West Chester; the Rev. John J. Heffernan, Sheepshead Bay; the Rev. William J. Hill, Brooklyn, the Rev. W. J. B. Daly, New-York, the Rev. Chester, the Rev. John J. Hall, Brooklyn, the Rev. W. J. B. Daly, New-York, the Rev. Cabried A. Healey, New-York, the Rev. John Hampine and the Very Ijev. Edward McKanna, West Chester, the Rev. W. H. O'Connell, Huslon; the Rev. J. F. Mullaney; the Rev. Ambrose Beharmack, College Point; the Rev. P. W. Tandy, New-York, the Rev. F. W. Wayrich, Brooklyn, and the Rev. Dr. O'Hourke, of Port Henry.

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EX POLICEMAN MARTIN THOUGHT TO BE INSANE Ex-Policeman Thomas Martin, until a week ago